



RADICULAR CYST (PERIAPICAL CYST) : A CASE REPORT.

Surgery

**Dr. Alagappan
Meyappan**

Professor, Department of Oral and Maxillofacial Surgery, Chettinad Dental College and Research Institute

**Dr. B
Subashrajan***

Postgraduate Student, Department of Oral and Maxillofacial Surgery, Chettinad Dental College and Research Institute *Corresponding Author

**Dr. Kayalvizhi
Mohan**

Postgraduate Student, Department of Oral and Maxillofacial Surgery, Chettinad Dental College and Research Institute

ABSTRACT

Radicular cyst is a common inflammatory odontogenic cyst, which arises from epithelial rest of Malassez due to pulpal necrosis. World Health Organization, classified cysts in the jawbones as a developmental, neoplastic, and inflammatory origin. Root canal infections may cause radicular cyst, few radicular cysts can be treated by conventional root canal therapy, and large radicular cyst is managed surgically (1). The present case report documents an infected radicular cyst on the anterior part of the palate. Based on clinical, radiographical and histopathological findings, the present case was diagnosed as an infected radicular cyst. Cyst enucleation and curettage was performed. Preservation of all other teeth and vital structures, without any postoperative complications and satisfactory healing, was achieved.

KEYWORDS

Radicular cyst, CBCT, Enucleation, Peripheral Osteotomy

INTRODUCTION -

Radicular cyst is one of the most common odontogenic cyst found in the jaws. It is inflammatory in nature and found mostly in the nonvital tooth. It usually presents at a later stage in life because the formation of the cyst is the last step in the progression of inflammatory events after a periapical infection. Most commonly, radicular cysts occur between the third and the sixth decade of life with male predominance (2). Clinically, the lesion is usually small, asymptomatic but may sometimes exhibit mild pain and sensitivity to percussion. The affected tooth is usually non-vital and the surrounding mucosa may exhibit bluish discolouration.

Radicular cysts may enlarge considerably, cause extensive bone destruction, and jeopardize the integrity of the associated vital teeth. The different treatment approaches are aimed mainly at eliminating the cystic epithelial membrane while reducing the risk of injury to vital structures.

Histopathologically, the radicular cyst is a chronic inflammatory lesion with a closed pathological cavity. It is lined either partially or completely by non-keratinized stratified squamous epithelium.

The present case report documents a case of an infected radicular cyst in the anterior maxilla in relation to 11, 21, 22, 12, 23. The adjacent teeth were vital without any evidence of root resorption. Peripheral osteotomy is a technique that involves enucleation of lesion with peripheral bone removal using rotary instruments (3). Conventional surgical enucleation with peripheral osteotomy resulted in the successful resolution of the cyst with complete bone regeneration. The procedure was performed under general anaesthesia.

Case Report -

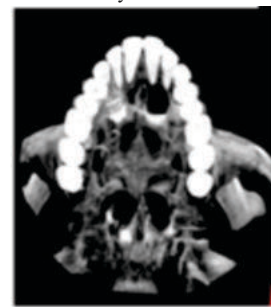
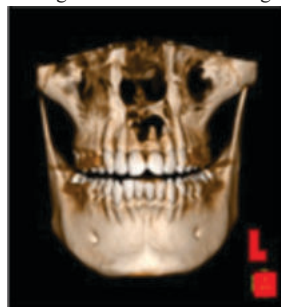


A 21 year-old male patient reported to our dental institute with a chief symptom of mild pain and pus discharge in relation to the upper front tooth region. On clinical examination, there was a large palatal

swelling with pus discharge, extending from teeth 12 to 23 (Figure 1). The dental history revealed repeated prescription of antibiotics and analgesics at private dental clinics for the same persistent swelling since 6 months. Patient's past dental history also reveals history of trauma to upper front tooth region making the tooth non vital. Medical history was unremarkable. Teeth 12, 11, 21, 22, 23 were non-vital. On palpation, the lesion was soft and fluctuant. The buccal vestibule was obliterated. Lymph nodes were non-palpable. Oral hygiene was good with mild stains and calculus.

Investigations

The patient was advised for cone beam CT (CBCT) and routine laboratory investigations. OPG radiographic examination revealed a large unilocular radiolucency with well-defined radiopaque border. CBCT reveals a solitary ill-defined hypodense area noted on the anterior maxillary region involving the root apices of 11, 12, 21, 22, 23 which measures about 20.3 mm mesio-laterally and 10.1 mm antero-posteriorly, with involvement of the nasopalatine canal is evident. Evidence of breach with expansion of labial and palatal cortex is seen in the region of 12 to mesial aspect of 23. Erosion of the anterior nasal floor is evident. Evidence of erosion of the antero-medial wall of maxillary sinus is evident (Figure 2). Routine laboratory investigations were within normal limits. Fine needle aspiration revealed serosanguinous fluid, consisting dense infiltrate of predominantly polymorphonuclear leukocytes. Few isolated epithelial cells were seen, which were normal in size, shape and appearance. Cytological picture was suggestive of an acute inflammatory lesion. Based on clinical, radiological and analysis of aspirate, a provisional diagnosis of an infected radicular cyst was made. After surgical enucleation and biopsy, histopathological picture revealed non-keratinized stratified squamous epithelium with long irregular rete ridges showing a characteristic arcading pattern. The underlying connective tissue was loosely fibrocellular with chronic inflammatory infiltrate containing predominantly lymphocytes and plasma cells. Many newly formed blood vessels with areas of haemorrhage were seen. Histological findings confirmed clinical diagnosis as Radicular cyst.



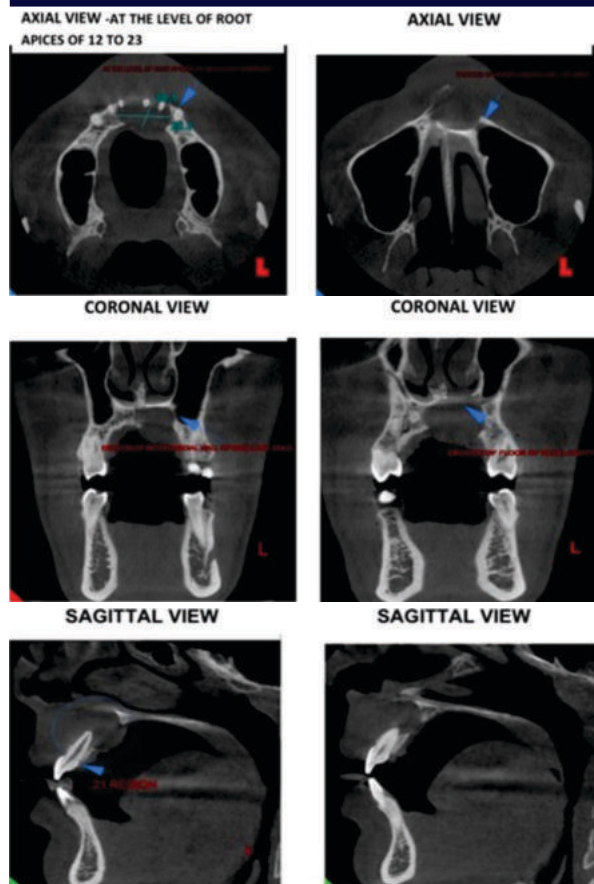


Figure 2

Differential Diagnosis

In view of its clinical characteristics, similar to some commonly occurring lesions in the oral cavity, the differential diagnosis of the radicular cysts should include dentigerous cyst, pindborg tumour, periapical cementoma, traumatic bone cyst, ameloblastoma, odontogenic keratocyst and odontogenic fibroma. Confirmatory diagnosis of the radicular cyst is established only after surgical biopsy and histopathological examination of the lesion.

Treatment

The patient was advised for surgical excision and biopsy under general anaesthesia. Before cystic enucleation, all nonvital teeth (12,11,21,22,23) were subjected to endodontic treatment. Incision placed, mucoperiosteal flap elevated. The lining of the lesion was detached from the bony walls. A surgical bur was used to remove bone adjacent to the cystic lining. Mechanical cauterization was performed. After enucleation and peripheral ostectomy, the cavity was filled with gelfoam and the incisions were closed with 3-0 vicryl (Figure 7). Apicectomy and retrograde filling with mineral trioxide aggregate was done in relation to teeth 21,22. Excised tissue was sent for histopathological investigation (Figure 6). Necessary prescriptions and postoperative instructions were given.

Intraoperative Images (Figure 3)



Figure 4



Figure 5



Figure 6.



Figure 7

Outcome And Follow Up

Postsurgical follow-up after 15 days showed considerable reduction in the size of swelling with prompt healing of surgical site. At 6 months follow-up, no recurrence was observed and orthopantomograph revealed a new bone formation at the site of cystic lesion.

DISCUSSION -

The cyst is defined as "a pathological cavity having a fluid, semifluid or gaseous contents and which is not created by the accumulation of pus" -Kramer 1974 (4). Radicular cyst considered as inflammatory cyst because of the caries tooth or trauma. Dental caries is the most common etiological factor of radicular cysts in primary teeth. The radicular cyst is most common odontogenic cyst also called as periapical cyst, apical periodontal cyst and root end cyst. These cysts comprise about 52 to 68% of all the cysts affecting the human jaw (5). Radicular cyst may also involve the entire maxillary sinus and extend into the floor of the nose which is unusually large (6).

Usually radicular cysts are asymptomatic, have slow growth and affect a permanent dentition (7).

Prevalence is highest in the third decade of life, men are more commonly affected than women (8). The incidence of radicular cyst in a deciduous tooth seems to be low as compared with a permanent tooth. Shorter duration of primary teeth could be one of the reasons and easy drainage through the presence of numerous accessory canals (9). Radicular cysts should be high on the list of differential diagnosis when elderly, edentulous patients present with cystic lesions in the jaws compared to dentate patients (10).

The pathogenesis of radicular cyst has been described in three phases; phase of initiation, cyst formation, and enlargement. However, two theories exist in cyst cavity formation. Later diffuses into the cyst cavity to raise the intraluminal hydrostatic pressure well above the capillary pressure. The increased intracyst pressure may lead to bone resorption and expansion of the cyst. Pocket cysts with lumen open to the necrotic root canal can become larger than usual because osmotic pressure plays a potential factor in the development of radicular cysts (8). Clinically a patient with periapical cyst has no symptom until there is an acute inflammatory exacerbation, the cyst reaches a large size, followed by swelling. Mild sensitivity may be noted in the affected area. Movement and mobility of adjacent teeth can occur as the cyst enlarges. Radicular cyst involving inferior alveolar nerve may cause paraesthesia due to neurosensory disturbance caused by mechanical compression or stress (5). Radiographic feature reveals a well-defined unilocular radiolucency located periapical to a tooth with pulp involvement.

On histopathological examination, most of the radicular cysts are lined wholly or partly, by nonkeratinized stratified squamous epithelium, this lining may be discontinuously ranging from 1 to 50 cell layers thick. In the early stages, the epithelial lining may show proliferation and arched pattern with intense inflammatory infiltrate. In enlarging cysts, the lining becomes quiescent and fairly regular with a certain degree of differentiation to resemble simple stratified squamous epithelium. There is presence of Rushton bodies or hyaline bodies

(12). Keratin formation occurs rarely, if present, affects only a part of the cyst wall. In the proliferating epithelium, the inflammatory cell infiltrate consists predominantly of polymorphonuclear leukocytes. The adjacent fibrous capsule is infiltrated by chronic inflammatory cells. The treatment of choice is dependent on the size and localization of lesion, bone integrity of the cystic wall and its proximity to vital structures. Cysts are usually enucleated, where the cystic lining separated from its inner bony surface and removed and the cavity allowed filling with blood clot (13). The treatment options for large periapical lesions ranges from conventional nonsurgical root canal treatment with long term calcium hydroxide therapy to various surgical interventions. Leaving the access point open for continued drainage is not a new procedure, and this technique has often been used for cases in which the endodontic lesions are large and the exudates from the root canal cannot be controlled (14). Squamous cell carcinoma can also arise within the lining of a residual odontogenic cyst which is very rare (15).

A follow-up of 1–2 years after treatment has to be done.

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